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IN REPLY TO RFP CC NO:

ACTION ITEM STATUS:
PARTIAL/OPEN ☐
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EG&G ROCKY FLATS

EG&G ROCKY FLATS, INC.
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March 22, 1995

95-RF-02799

Linda S. Hendrickson
Wastren, Inc.
Norwest Bank Plaza
12000 North Pecos, Suite 250
Westminster, Colorado 80234

DIRECTION FOR OPERABLE UNIT (OU) 15: INSIDE BUILDING CLOSURES RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) CERTIFICATION – RJR-009-95

Action: Review and reply if required

The purpose of this correspondence is to respond to the meeting highlights transmitted by Jeff Paynter (JKP/010/0395) on March 16, 1995.

The outline of the minimum requirements for RCRA closure certification as presented by Mr. Paynter have been received and reviewed. I am in agreement with the approach and steps proposed for the completion of the certification. I expressed this to Mr. Paynter by phone on March 20, 1995. Further, the agreement made with Dennis Schubbe that radiological and beryllium analysis is not within the scope of RCRA closure and that this shall be stated in formal transmittal to EG&G Rocky Flats, Inc.

This correspondence shall be formal direction to complete RCRA certification for all **six** Individual Hazardous Substance Sites (IHSS) included within OU 15 and as listed here: IHSS 178, 179, 204, 211, and 217. IHSSs 178, 179, and 180 have been added for purposes within EG&G and do not require specific Department of Energy/Rocky Flats Field Office direction.

The issue of closure of the uranium chip roaster should proceed as agreed with Mr. Schubbe. The agreement includes that Wastren will explicitly state that closure is being completed without sampling of residual roaster oxide along with analytical results that Wastren possesses on samples of drummed roaster oxide.

The visual inspection of the OU 15 IHSSs is currently scheduled for March 23, 1995. Roland Hea, ERM Rocky Mountain Inc., is the Project Manager for the remedial investigation and will lead the tour. Roland will be available to answer any questions as to the IHSS conditions, implemented sampling activities, and analytical results.

This correspondence shall be formal direction that Wastren not prepare a separate proposal for the cost of the additional IHSSs for closure. A **total** cost shall be forwarded to me for informational and budgeting purposes.

REVIEWED FOR CLASSIFICATION/UCNI
BY G. T. Osdiek
DATE 4-24-95

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ADMIN RECORD

A-OU15-000222

The closure certification schedule shall remain as agreed. This schedule completed certification for submittal to EG&G by April 7, 1995. If Wastren cannot achieve this submittal date, please contact me immediately with Wastren's achievable submittal date.

The Colorado Department of Public Health and Environment (CDPHE) has provided a Table of Contents from an approved RCRA Closure Certification. The certification for OU 15 should follow this same format. Please contact me with any questions regarding the format.

The meeting minutes as transmitted shall be entered into the Administrative Record for OU 15. Thank you for your promptness in their delivery. If you have any questions regarding this correspondence, please contact me at telephone extension 8557 or Dennis Schubbe at telephone extension 8709.

Richard J. Ray
Operable Unit 15 Project Manager
Environmental Restoration Program Division
EG&G Rocky Flats, Inc.

jm

Attachment:
1. Tank C Closure Report, Lowry Air Force Base, Colorado, January, 1994

cc:
F. M. Denham – Wastren, Inc.
J. K. Paynter – " "
D. L. Uhl – " "

52712

TANK C CLOSURE REPORT
LOWRY AIR FORCE BASE, COLORADO

Prepared for:

HEADQUARTERS AIR EDUCATION AND TRAINING COMMAND

ENVIRONMENTAL MANAGEMENT DIVISION

RANDOLPH AFB, TEXAS

and

ARMSTRONG LABORATORY/OEB

BROOKS AFB, TEXAS

January 1994

Prepared by:

ENGINEERING-SCIENCE, INC.
1700 Broadway, Suite 900
Denver, Colorado 80290

CONTENTS

SECTION 1

INTRODUCTION

This report has been prepared by Engineering-Science, Inc. (ES) to document the closure activities undertaken for Tank C at Lowry Air Force Base (AFB), Colorado. The closure of Tank C was conducted in substantive compliance with the Resource Conservation and Recovery Act (RCRA). ES is under contract with Armstrong Laboratories, Brooks AFB, Texas, to perform the Tank C closure and prepare the closure report for Air Education and Training Command (AETC), Randolph AFB, Texas.

1.1 PROJECT DESCRIPTION

Tank C was an abandoned petroleum underground storage tank (UST) located at Lowry AFB. The tank was discovered to contain RCRA-listed hazardous waste constituents during UST removal activities in 1991. Because of the nature of the tank contents, the Colorado Department of Health (CDH) determined that the closure of Tank C was regulated by the state's hazardous waste laws, and that a closure plan complying with the substantive requirements for a RCRA closure was required. A copy of the approved closure plan is provided in Appendix A. This report summarizes the data collected during closure activities, and provides certification of closure in accordance with the approved closure plan as required in the Code of Colorado Regulations, Title 6, Regulation 1007-3 (6 CCR 1007-3), Section 264.115.

1.2 HISTORICAL OVERVIEW

Tank C was located north of Building 403 at Lowry AFB (Figures 1.1 and 1.2). Lowry AFB real estate property records indicate that the 50,000-gallon concrete UST was installed in 1943 near Building 368-A (which has since been demolished). The stated use of the tank was storage of off-specification gasoline.

The 1955 Master Plan for Lowry AFB indicates that Building 368A was the housing for a pump station located above Tank C. The Master Plan map of the liquid fuel distribution system of Lowry AFB indicates that Tank C had a 50,000-gallon capacity and was used to store off-specification fuel. Two steel 126,000-gallon fuel USTs (jet fuel and 100-octane gasoline) were also present in the vicinity [Wilson & Company, Engineers (Wilson), 1955].

There are no records documenting the manner in which Tank C was rendered inactive. It is likely that Tank C was abandoned in 1963, when the Base's flying mission ended and large quantities of fuel were no longer needed. Base personnel

SECTION 2

GEOLOGY AND HYDROGEOLOGY

Lowry AFB is located in Denver and Arapahoe Counties within the Denver, Colorado, metropolitan area. Private residences and small industrial and commercial businesses surround the Base. The City of Denver and Lowry AFB are located along the western edge of the Great Plains physiographic province, which terminates to the west at the Front Range of the Rocky Mountains (Figure 2.1).

Topography of the Lowry AFB vicinity consists of gently rolling hills separated by broad valleys. Local relief across the Base is approximately 80 feet over a distance of approximately 1.5 miles. The Base covers an area of approximately 3 square miles, and is bounded by 11th Avenue on the north, Dayton and Havana Streets on the east, Alameda Avenue on the south, and Monaco Parkway and Quebec Street on the west (Figure 1.1).

2.1 GEOLOGY OF LOWRY AFB

Geological information for Lowry AFB summarized in earlier reports is based on borehole data collected during previous Installation Restoration Program (IRP) investigations [ES, 1983; Science Applications International Corporation (SAIC), 1990]. The subsurface exploration data produced during the IRP is more complete for the southeastern and northwestern quadrants of the Base than it is in the northeastern and southwestern quadrants. Several monitoring wells were installed in the vicinity of Tank C (Figure 1.2). In addition to these geologic data, site assessment activities recently performed at various UST sites at Lowry AFB (ES, 1992) have contributed to the geological information of the Base.

The stratigraphy at Lowry AFB consists of unconsolidated loess and alluvial deposits overlying the eroded bedrock surface of the Denver Formation. The Denver Formation is a gray, silty claystone and sandy siltstone with generally thin, discontinuous sand layers, and is Late Cretaceous to Paleocene in age (96 to 55 million years old). The combined thickness of the Denver and the underlying Arapahoe Formation is 1,000 to 1,200 feet thick in the vicinity. The Arapahoe Formation consists of interbedded conglomerates, sandstones, siltstones, and clay shales. Underlying bedrock formations include sands, shales, and clays of the Laramie Formation (600 to 650 feet thick), underlain respectively by the Fox Hills Sandstone (200 feet thick) and the Pierre Shale (5,000 to 8,000 feet thick). The regional dip of the bedrock layers is toward the west.

Unconsolidated alluvial deposits range in thickness from less than 1 foot to over 60 feet, and consist of generally discontinuous sand-rich and clay-rich lenses. A 1- to 10-

SECTION 3

CONTENTS AND TANK REMOVAL

3.1 TANK EXCAVATION

On September 20, 1991, the soil above Tank C was removed during initial UST closure activities. A pumphouse foundation was encountered above the tank, and the top of the tank was encountered 5.5 feet bgs (Figure 3.1). Tank C was found to be a cylindrical tank 34 feet in diameter and was estimated to be 15 feet deep. The concrete sides of the tank were approximately 1.5 feet thick. Field measurements indicated that Tank C had a capacity of approximately 70,000 gallons, rather than the 50,000-gallon capacity indicated in the Lowry AFB Master Plan (Wilson, 1955).

A tank manway was uncovered, and sampling of the tank contents was conducted via the manway on September 23, 1991. At that time, only a portion of the top of Tank C had been exposed by excavation activities. The tank was determined to be full of water, indicating that the tank had not leaked, and a plan was implemented to manage the contents as described in Sections 3.2 and 3.3.

The soil removed during the partial excavation was placed in two stockpiles: one large pile to the northeast, and one smaller stockpile to the southwest of the excavation. Both stockpiles were placed on, and covered with, plastic sheeting to prevent leaching of potential contaminants into underlying soils. Samples of the soil stockpiles were sampled and analyzed for total recoverable petroleum hydrocarbons (TRPH) and benzene, toluene, ethylbenzene, and xylenes (BTEX). The results were reported in the UST site assessment report (ES, 1992), and are summarized in Table 3.1.

During the 1.5 weeks preceeding January 2, 1992, the soil removed from above Tank C in 1991 was transported to an above-ground soil treatment area (i.e., landfarm) for treatment of petroleum constituents by biodegradation. Treated soil from this landfarm was subsequently sampled and used for backfilling the Tank C excavation in accordance with the approved closure plan (ES, 1993). The analytical results of the treated soil are discussed in Section 4.4.

The soil above the remainder of the tank was removed in anticipation of sludge removal activities beginning on January 13, 1993. This soil was placed in one stockpile located southwest of the tank site, and was subsequently sampled and used for backfill in accordance with the approved closure plan. Additional soil from around the perimeter of the tank was also removed beginning on August 11, 1993, to prepare for tank demolition. This soil was sampled *in situ* prior to excavation, and then was added to the existing stockpile located southwest of the tank and subsequently used for

SECTION 4

SITE ASSESSMENT

Soil samples were collected from alongside the tank prior to excavation to determine if this material would need to be handled as hazardous waste; from the bottom of the excavation following tank removal for site assessment purposes, in accordance with the approved closure plan (ES, 1993); and from backfill sources to verify conformance with the closure plan requirements. The sample locations, analytical methods, and analytical results of the site assessment soil sampling are discussed in the following subsections. Groundwater was not encountered in the excavation, and was determined to occur approximately 5 feet below the bottom of the tank based on water level measurements in nearby monitoring wells.

4.1 SITE ASSESSMENT METHODS

Soil sampling methods performed were in accordance with the approved closure plan (ES, 1993). Soil samples were collected by uncovering the sample location with a backhoe bucket or hand auger, and immediately driving a cylindrical brass liner with a stainless steel core sampler into the exposed soil to obtain a sample. A 2-inch-diameter core sampler with a drive-hammer attached was used to collect undisturbed samples and to minimize the loss of any potential VOCs present in the soil. The sample was sealed by placing Teflon® sheeting and end caps on the sample cylinder and sealing it with duct tape. The samples were then placed into a cooler with ice and cooled to less than 4°C to preserve the volatile constituents that may have been present in the soil. The depth and location of each sample was recorded. Samples that were used for field screening were collected with a decontaminated trowel.

Field screening by headspace analysis involved placing a soil sample into a sealable plastic bag. The containerized sample was then allowed to equilibrate at a minimum of 15°C for 15 minutes or more. A PID was used to measure vapors that accumulated in the bag by pushing the tip of the probe through the plastic. The maximum PID reading for each sample was recorded. Background PID measurements were determined in the field.

Waste characterization soil samples were collected from alongside the tank on April 27, 1993, by collecting the soil sample with the steel core sampler placed on a 10-foot-long extension rod. The site assessment soil samples were collected on September 1, 1993 by hand augering to a depth of approximately 12 inches at each sample location. The soil from the 12- to 18-inch interval (measured from the bottom of the excavation) was used for field screening by headspace analysis, and the soil from the 18- to 30-inch

SECTION 5

SUMMARY AND CONCLUSIONS

Tank C was an abandoned petroleum UST located at Lowry AFB that was previously used for storage of off-specification gasoline. During UST closure activities in 1991, Tank C contents were discovered to contain an F001-listed hazardous waste constituent (TCE). The CDH subsequently determined that the closure of Tank C was to be regulated under the state's hazardous waste laws, and that closure in substantive compliance with RCRA was required. A RCRA closure plan was subsequently developed and approved by the CDH for closure of Tank C (ES, 1993).

Removal of tank contents included a combination of approved sanitary sewer disposal or treatment and stormwater sewer discharge of the tank water. The tank sludge was removed from the tank with a vacuum truck and placed into steel rolloff containers. The sludge containers were subsequently hauled to the Highway 36 TSDF for treatment and disposal as hazardous waste. The interior of Tank C was then triple-rinsed, and the rinse water was removed, treated, and discharged into the storm sewer in accordance with a CDH general permit.

Concrete samples were collected for characterization of the tank concrete rubble. Based on the presence of detectable TCE in the concrete, the concrete was determined to be have been mixed with a listed hazardous waste. Concrete rubble was subsequently loaded into steel rolloff containers and hauled to the Highway 36 TSDF for direct-burial disposal as hazardous waste.

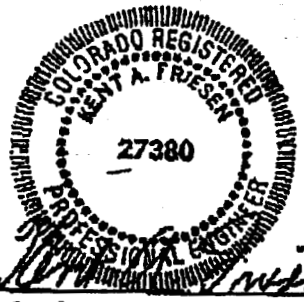
Following removal of the concrete tank, site assessment soil samples were collected from soils below the tank and from potential backfill sources, and analyzed for total VOCs, total RCRA metals, TVPH, and TEPH. No chlorinated VOCs or anomalous metals were detected in the soils below Tank C. However, one sample of material from the ramp into the excavation contained 18 µg/kg of TCE. Based on these analytical results, the ramp material was removed from the excavation, and approximately 20 tons of this material was hauled to Highway 36 TSDF for direct-burial disposal as hazardous waste. A confirmatory sample was collected for VOC analyses from the native soil below the excavated ramp material, and results confirmed that all material containing TCE had been removed from the excavation.

All contaminated material, including the tank contents, tank concrete, and contaminated soil, has been removed from the Tank C site. The excavation has been backfilled with soil and aggregate meeting CDH clean backfill criteria. Therefore, this site has attained clean closure, and additional investigation or remediation is not required.

SECTION 6

CLOSURE CERTIFICATION

The undersigned hereby certify that the closure of the Tank C site at Lowry Air Force Base, Colorado, was performed in accordance with the specifications of the approved closure plan entitled "Revised Tank C Closure Plan, Lowry Air Force Base, Colorado," dated May 21, 1993.



Professional Engineer

1/14/94
Date

Kent A. Friesen, P.E.
Engineering-Science, Inc.
1700 Broadway, Suite 900
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Owner

1/20/94
Date

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